REMARKS

Claims 1-29 are currently pending in the subject application, and are presently under consideration. Claims 1-29 stand rejected. Claims 1-3, 11-12, 14, 19, 22-24, and 26-28 have been amended. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

I. Rejection of Claims 1-29 Under 35 U.S.C. §101

Claims 1-29 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.

Amended claim 1 recites a system for optimizing a circuit design wherein a plurality of value sets represented as a plurality of real chromosomes, the plurality of value sets correspond to different circuit configurations associated with the circuit design generated by a circuit analysis tool. Amended claim 1 also recites a real cost function that determines real costs for a plurality of real chromosomes and an incremental cost function that determines speculative costs for speculative chromosomes, the speculative costs corresponding to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome. Amended claim 1 further recites a validator that initiates a validation on the at least one speculative chromosome that has a predetermined speculative count, wherein validation comprises executing the real cost function on the at least one speculative chromosome to provide a real cost associated with the at least one speculative chromosome. Amended claim 1 recites a system having a practical application that provides a useful, tangible and concrete result. Accordingly, amended claim 1 meets the requirements set forth in 35 U.S.C. § 101.

Claims 2-10 depend either directly or indirectly from amended claim 1 and are patentable subject matter for at least the same reasons as amended claim 1 and for the specific elements recited therein.

Additionally, amended claim 2 recites that a real cost function comprises an analysis tool and a power/timing estimator. Amended claim 2 further defines a system having a

practical application that provides a useful, tangible and concrete result. Therefore, amended claim 2 recites patentable subject matter.

Furthermore, amended claim 3 recites that a genetic algorithm generates generations of speculative chromosomes until a desirable circuit configuration based on real costs has been satisfied. Amended claim 3 further defines a system having a practical application that provides a useful, tangible and concrete result. Therefore, amended claim 3 recites patentable subject matter.

Further still, amended claim 11 recites an incremental cost function that determines speculative costs for speculative chromosomes, the speculative costs corresponding to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of at least one associated parent chromosome. Amended claim 11 further defines a system having a practical application that provides a useful, tangible and concrete result. Therefore, amended claim 11 recites patentable subject matter.

Claim 12 has been amended to recite a method for selecting a value set associated with a set of parameters of a circuit design wherein the plurality of real chromosomes represent a plurality of value sets, wherein the plurality of value sets represents different circuit configurations associated with a circuit design generated by a circuit analysis tool. Amended claim 12 also recites determining real costs for at least one speculative chromosome. Amended claim 12 recites a method having a practical application that provides for a useful, tangible and concrete result. Accordingly, amended claim 12 meets the requirements set forth in 35 U.S.C. § 101.

Claims 13-21 depend either directly or indirectly from claim 12 and are patentable subject matter for at least the same reasons as amended claim 12, and for the specific elements recited therein.

Additionally, amended claim 14 recites that execution of a real cost function comprises optimizing a circuit design. Amended claim 14 further defines a method having a practical application that provides a useful, tangible and concrete result. Therefore, amended claim 14 recites patentable subject matter.

Furthermore, amended claim 19 recites that speculative costs correspond to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome. Amended claim 19 further defines a method having a practical application that provides a useful, tangible and concrete result. Therefore, amended claim 19 recites patentable subject matter.

Claim 22 has been amended to recite a computer readable medium having computer executable instructions for performing a method that comprises a plurality of value sets that represent a plurality of circuit configurations associated with a circuit design. Claim 22 has also been amended to recite approximating costs associated with speculative chromosomes in a speculative chromosome generation and determining real costs associated with at least one speculative chromosome that has a predetermined speculative count. Amended claim 22 recites a computer readable medium having instructions having a practical application that provide a useful, tangible and concrete result. Accordingly, amended claim 22 meets the requirements set forth in 35 U.S.C. § 101. Therefore, amended claim 22 recites patentable subject matter.

Claims 23-25 depend from amended claim 22 and are patentable subject matter for at least the same reasons as amended claim 22 and for the specific elements recited therein.

Additionally, amended claim 23 recites that real costs are determined by an analysis tool and a power/timing estimator. Amended claim 23 further defines a computer readable medium having a practical application that provides a useful, tangible and concrete result. Accordingly, amended claim 23 recites patentable subject matter.

Furthermore, amended claim 24 recites executing the method of claim 22 until a desirable circuit configuration based on the real costs has been satisfied. Amended claim 24 further defines a computer readable medium having instructions having a practical application that provide a useful, tangible and concrete result. Accordingly, amended claim 24 recites patentable subject matter.

Claim 26 has been amended to recite that real chromosomes represent a plurality of circuit configurations associated with a circuit design. Amended claim 26 also recites means for validating that includes executing a validation by executing means for determining a real

cost on at least one speculative chromosome. Amended claim 26 recites a system that provides a tangible result, namely a real cost for at least one speculative chromosome. Since amended claim 26 is a system for minimizing a cost associated with a circuit design, the real cost determined for the at least one speculative chromosome will be a useful, tangible and concrete result. Accordingly, amended claim 26 recites a system having a practical application that provides a useful, tangible and concrete result. Thus amended claim 26 meets the requirements set forth in 35 U.S.C. § 101. Therefore, amended claim 26 recites patentable subject matter.

Claims 27-29 depend either directly or indirectly from amended claim 26 and are patentable subject matter for at least the same reasons as amended claim 26 and for the specific elements recited therein.

Additionally, amended claim 27 recites that a speculative cost corresponds to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome. Amended claim 27 further defines a system having a practical application that provides a useful, tangible and concrete result. Accordingly, amended claim 27 recites patentable subject matter.

Furthermore, amended claim 28 recites that real costs are determined by a real cost function that comprises an analysis tool and a power/timing estimator. Amended claim 28 further defines a system having a practical application that provides a useful, tangible and concrete result. Accordingly, amended claim 28 recites patentable subject matter.

II. Rejection of Claims 1-29 Under 35 U.S.C. §102(e)

Claims 1-29 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,766,497 to Anderson ("Anderson"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Anderson discloses a genetic optimization process that includes generating a set of unique chromosomes and assigning the chromosomes a performance score (See Anderson, Col. 2, Line 56-Col. 3, Line 4). Anderson does not disclose a genetic algorithm that generates at least one generation of speculative chromosomes, the speculative chromosomes

representing value set variations of a plurality of value sets, each generation of speculative chromosomes being assigned a speculative count corresponding to a speculative chromosome generation, as recited in amended claim 1. The Examiner contends that item 230 of FIG. 2 of Anderson corresponds to the speculative count recited in amended claim 1. Applicant respectfully disagrees. As stated in the Office Action, in Anderson, 'C' is the count of children that have been generated. Amended claim 1 recites that a speculative count corresponds to a speculative chromosome generation. That is, in amended claim 1, the speculative count represents the number of generations a speculative chromosome is removed from a real chromosome. The 'C' value disclosed in Anderson has no relation associated with the generation of the children that are counted. Thus, Anderson does not disclose a genetic algorithm that generates at least one generation of speculative chromosomes, the speculative chromosomes representing value set variations of a plurality of value sets, each generation of speculative chromosomes being assigned a speculative count corresponding to a speculative chromosome generation, as recited in amended claim 1.

Additionally, Anderson does not disclose a validator that initiates validation once at least one speculative chromosome has a predetermined speculative count, as recited in amended claim 1. As stated above, Anderson does not disclose a speculative count. Thus, Anderson cannot disclose a validator that initiates validation once at least one speculative chromosome has a predetermined speculative count, as recited in amended claim 1. Accordingly, Anderson does not disclose each and every element of amended claim 1. Therefore Anderson does not anticipate amended claim 1. Thus, amended claim 1 should be patentable over the cited art.

Claims 2 and 4-11 depend either directly or indirectly from amended claim 1. Accordingly, claims 2 and 4-11 are not anticipated by the cited art for at least the same reasons as amended claim 1, and for the specific elements recited therein. Thus, claims 2 and 4-11 should be patentable over the cited art.

Additionally, claim 4 recites a genetic algorithm that generates a speculative child chromosome from at least one of a first parent chromosome and a second parent chromosome, wherein the speculative child chromosome is assigned a speculative count that is higher than the speculative count of the parent chromosome having the high speculative

count. Claim 4 further clarifies the meaning of "speculative count." As stated above, in Anderson the number 'C' has no relationship to the generation of child chromosome being counted. Accordingly, Anderson does disclose each and every element of claim 4.

Furthermore, claim 6 recites a speculation counter that increments for each new generation of speculative chromosomes generated by a genetic algorithm. The value 'C' disclosed in Anderson increases for each child chromosome produced. That is, in Anderson, each child chromosome corresponds to a unique value of 'C'. In contrast, in claim 6, each generation of chromosome has a unique speculation count. Thus, the 'C' value disclosed in Anderson is operating completely differently than the speculation counter recited in claim 6. In claim 6, multiple chromosomes of the same generation can have the same speculation count. Therefore, Anderson does not disclose a speculation counter that increments for each new generation of speculative chromosomes generated by a genetic algorithm, as recited in claim 6.

Further still, amended claim 11 recites an incremental cost function that determines speculative costs for speculative chromosomes, the speculative costs corresponding to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome. Nothing disclosed in Anderson corresponds to the speculative costs recited in amended claim 11. Since amended claim 11 depends from amended claim 1, amended claim 11 recites a real cost function that determines real costs for a plurality of real chromosomes, and an incremental cost function that determines speculative costs for speculative chromosomes. Amended claim 11 recites two different cost functions, namely, a real cost function and an incremental cost function.

Anderson discloses that parent chromosomes and children chromosomes are assigned a score that indicates the performance of a particular chromosome. Anderson does not disclose that there is any difference between the process for determining a score for a parent chromosome and the process for determining a score for a child chromosome. Therefore, Anderson does not disclose both, a real cost function, and a speculative cost function, as recited in amended claim 11. Accordingly, Anderson does not disclose an incremental cost function that determines speculative costs for speculative chromosomes, the speculative costs

corresponding to an approximate change in costs of at least one associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome, as recited in claim 11. Thus, Anderson does not disclose each and every element of amended claim 11.

Amended claim 12 recites assigning a speculative count to speculative chromosomes based on a corresponding generation of the speculative chromosome. As stated above with respect to amended claim 1, Anderson does not disclose a speculative count. Additionally, amended claim 12 recites approximating speculative costs for speculative chromosomes and determining real costs for at least one speculative chromosome. Thus, claim 12 recites two different costs, namely, real costs and approximate speculative costs. As stated above with respect to amended claim 11, Anderson only discloses assigning one kind of score. Thus, Anderson does not disclose each and every element of amended claim 12. Therefore, Anderson does not anticipate amended claim 12.

Claims 13-21 depend either directly or indirectly from amended claim 12. Claims 13-21 are not anticipated by the cited art for at least the same reasons as amended claim 12 and for the specific elements recited therein. Accordingly, claims 13-21 should be patentable over the cited art.

Additionally, claim 17 is similar to claim 4. Accordingly, claim 17 is patentable over the cited art for substantially the same reasons as claim 4.

Furthermore, claim 18 recites incrementing a speculation counter for each new generation of speculative chromosomes, a validation being initiated when the speculative counter has a predetermined speculative count. Anderson does not disclose a speculation counter that counts generations of speculative chromosomes. In Anderson, a counter counts the number of children that have been created. Nothing in Anderson discloses that anything in Anderson counts generations. Thus, Anderson does not disclose a speculation counter for each new generation of speculative chromosomes, a validation being initiated when the speculative counter has a predetermined speculative count, as recited in claim 18. Therefore, Anderson does not disclose each and every element of claim 18.

Further still, amended claim 19 recites that speculative costs correspond to an approximate change in costs of at least one associated parent chromosome due to a value set

variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome. For the reasons stated above, with respect to amended claim 11, Anderson does not disclose costs that correspond to the speculative costs recited in amended claim 19. Therefore, Anderson does not disclose each and every element of amended claim 19.

Amended claim 22 recites assigning a speculative count to speculative chromosomes based on a corresponding generation of the speculative chromosome. As stated above with respect to claim 1, Anderson does not disclose assigning a speculative count. Additionally, amended claim 22 recites approximating costs associated with speculative chromosomes in each speculative chromosome generation and determining real costs associated with at least one speculative chromosome that has a predetermined speculative count. Similarly to amended claim 12, amended claim 22 recites approximated costs and real costs. As stated above, Anderson only discloses assigning one kind of score. Therefore, Anderson does not disclose approximating costs associated with speculative chromosomes in each speculative chromosome generation and determining real costs associated with at least one speculative chromosome that has a predetermined speculative count, as recited in amended claim 22. Accordingly, Anderson does not disclose each and every element of amended claim 22.

Claims 23-25 depend from amended claim 22. Claims 23-25 are not anticipated by the cited art for at least the same reasons as amended claim 22 and for the specific elements recited therein. Accordingly, claims 23-25 should be patentable over the cited art.

Amended claim 26 recites means for generating generations of speculative chromosomes with assigned speculative counts corresponding to a generation number of the speculative chromosome, the speculative chromosome being assigned a speculative count that is higher than a parent chromosome from which it is derived. As stated above with respect to claim 1, Anderson does not disclose a speculative count. Additionally, amended claim 26 recites means for postponing validation of at least one speculative chromosome, until at least one speculative chromosome has a predetermined speculative count. Anderson does not disclose postponing validation of at least one speculative chromosome, as recited in amended claim 26. Anderson discloses that each child chromosome may be simulated to determine its corresponding performance (See Anderson, Col. 3, Lines 27-30). Nothing in

Anderson discloses postponing validation of at least one speculative chromosome, as recited in amended claim 26. Thus, Anderson does not disclose each and every element of amended claim 26.

Claims 27-29 depend either directly or indirectly from amended claim 26. Claims 27-29 are not anticipated by the cited art for at least the same reasons as amended claim 26 and for the specific elements recited therein. Accordingly, claims 27-29 should be patentable over the cited art.

Additionally, amended claim 27 recites means for determining a speculative cost for a respective speculative chromosome, the speculative costs corresponding to an approximate change in costs of at leas tone associated parent chromosome due to a value set variation of the speculative chromosome relative to a value set of the at least one associated parent chromosome. Since claim amended 27 depends from amended claim 26, amended claim 27 recites means for determining real costs and means for determining speculative costs. As stated above, Anderson only discloses one kind of score that is assigned. Thus, Anderson does not disclose means for determining real costs and means for determining speculative costs, as recited in claim 27. Therefore, Anderson does not disclose each and every element of claim 27.

For the reasons described above, claims 1-10, 12-18, 20-24, and 26-29 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Should the Examiner have any questions concerning this paper, the Examiner is invited and encouraged to contact Applicant's undersigned attorney at (216) 621-2234, Ext. 104.

No additional fees should be due for this response. In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to Deposit Account No. 08-2025.

Respectfully submitted,

By: _____

Christopher P. Harris
Registration No. 43,660
Attorney for Applicants

CUSTOMER NO.: 022879

Hewlett-Packard Company
Legal Department MS 79
3404 E. Harmony Road
Ft. Collins, CO 80528